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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,317	04/16/2004	Masanori Kobayashi	251967US2	7910
22850	7590	10/13/2005		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CHANG, AUDREY Y	
			ART UNIT 2872	PAPER NUMBER

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/825,317	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-10, 17, 19-23, 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-16, 18, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/25/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election *with traverse* of **species J** (claims 11-16, 18, 24 and 25) in the reply filed on **July 28, 2005** is acknowledged. The traversal is on the ground(s) that since electronic searching is commonly performed there is no burden or extra effort needed for searching all **15 species** at one examination. This is not found persuasive because as explicitly demonstrated in the figures of the instant application, the **15 species** are *all based on different operation principles* which is not possible to be examined and searched in single examination and searches. Applicant also is silent about why claims 1-10 (drawn to non-elected species) have to be examined with the elected species.

The requirement is still deemed proper and is therefore made **FINAL**.

2. **Claims 1-10, 17, 19-23 and 26-27 are withdrawn** from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 28, 2005.

3. Claims 11-16, 18 and 24-25 remain pending in this application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claim 11 is rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was **not** described in the

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specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 11 recites that the image displayed in a time-dividing manner. If this is the case then the image light is already “separated” by the time division manner into right and left image light and no further step of separation the light image is needed. The specification and the claims therefore fails to teach how could the already separated left and right eye image light be “separated” into left and right image light. This separation is only needed when the image is spatially multiplexed.

Claim Objections

6. Claims 11, 12-16, 18 and 24-25 are objected to because of the following informalities:

(1). The phrase “time diving manner” and the phrase “spatially time-dividing manner” recited in claims 11 and 12 are confusing and indefinite since it is not clear what exactly are these manners. In particular, it is not clear what does it mean by “time dividing manner”. In the stereoscopic art, the time division manner is referred to inputting right eye image and left eye image *alternatively in time sequence*, if this is the case, then there **will not** be any spatial division of the image needed for each image frame since only one type of images (left or tight eye image) is presented. Also it is not clear if these divisions have anything to do with the “multiple views”. The phrase concerning “spatially dividing the input image by L and time-dividing the input image by m” recited in claim 12 is confusing and indefinite since it is not clear what are theses divided images? How are they relate to the right eye images and left eye images and the multiple views necessary for making the stereoscopic image display. Clarifications are required.

(2). The phrase “if” recited in claim 15 is indefinite since it is not clear if the phrase after the “if” statement is or is not part of the claims. Also what is considered to be the number of input images.

(3). The phrase “light image” should read as “image light”. Light does not have image by itself.

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(4). Claim 16 is incomplete since it is not clear what is the relationship between the switching of the deflector and the rest of the elements in the display device.

The scopes of the claims are very vague and confusing which makes examination of the claims very difficult and they can only be examined in the broadest interpretation. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Son et al (PN. 6, 229,561).**

Son et al teaches a *multi-view three-dimensional image system* that enables a plurality of observers to view three-dimensional images wherein the method for displaying the three-dimensional image including the steps of generating a plurality of input image that corresponds to the multiple views, (channels 1-n, Figure 3), and converting the input image into *spatially time divisional images* (please see the time divisional of at least two time frames, Figure 3) by using a *signal converter* (2) and displaying these spatially time-dividing images on a display device (15, Figure 1). *An electro-optic switch* (13-1) is used to *separate* the image light into left eye image and right eye image and a *holographic screen* (4) serves to *deflect* the optical paths of the left eye and right eye images to left eye and right eye (8, 9) at different and multiple view points (6), respectively, (please see the abstract and columns 4-5).

This reference has therefore anticipated the claim.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 12-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Son et al (PN. 6,229,561).**

Son et al teaches a *multi-view three-dimensional image system* that enables a plurality of observers to view three-dimensional images wherein the image system comprises a *display device* (15, Figure 1, or 40, Figure 6) positioned at a prescribed distance from multiple viewpoints (6 or 34), an *electro-optic switch* (13-1, Figure 1) or *scanner* (43 and 44 Figure 6) serves as the *image separator* positioned on the viewpoint side of the display device, and a *holographic screen* (4, Figure 1 or 33 Figure 6) serve as the *light deflector* to deflect the image light separated by the image separator and to guide the image light to multiple viewpoints, (please see Figures 1 and 6). The image display device receives a plurality of input images that correspond to the multiple views, (output signal, Figure 3). The input images have been converted by a signal converter (2) to have the image format of *spatially time divisional images* (please see the spatial and time divisional image frames, Figure 3).

The features concerning the “dividing the input image by L” and “time dividing the input image by m” are confusing and indefinite, they can only be examined in the broadest interpretation. It is implicitly true that the input image displayed by the display device is spatially divided into a plurality of images (that corresponds to sub-viewing zones 7), at least include one for the left eye and one for the right eye. The input images are also time divided together with the switching of the electro-optic switch (13-1) or the scanner, wherein the electro-optic switch, switches *different* vertical strips switches (14, Figure

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1(b)) ON and OFF in sequence of time in accordance with the image displayed on the display device in time sequence also to separate the left eye and right eye image for the different viewpoints. The time division can be more than one.

With regard to claim 13, Son et al teaches that the image separator is an electro-optic switch with transmissivity of the vertical slits varying in pitch, and it is implicitly true in order for all the spatially divided image portion being transmitted, the pitch must equal to the number of the spatially divided image times the width of each of the spatially divided image portion.

With regard to claims 14-16, the number of the deflection directions, which responsible for the providing the multiple views equal to the number of multiple views provided. It is implicitly true that the number of input images should equal to the number of spatial division and the time division of the image. Claim 16 is confusing. However it is implicitly true that the image displayed on the display device has to be synchronized with the separator and the deflector.

With regard to claim 18, it is implicitly true that the image is re-written at all pixels of the display device.

11. Claims 11-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nose et al (PN. 5, 966,167).

Nose et al teaches a *stereoscopic display device* that is comprised of a *display device* (3, Figure 6) disposed at prescribed distance from multiple viewpoints, a *lenticular lens* (5) serves as the *image separator*, disposed at viewpoint side of *display device* for *separating* the spatially divided image into left eye and right eye image light, and a *variable apex angle prism* (13) serves as the *light deflector* for deflecting the image light from the image separator into different viewpoints, (please see Figure 6).

The image displayed on the display device is *spatially divided* into at least two images for left eye and right eye view. This reference however does not teach explicitly about displaying image in time

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divisional manner. But such modification is obvious to one skilled in the art by displaying stereoscopic related image intended for *different viewpoints* on the display device *at different time frame*, that is to say by displaying the image for viewpoint (6a) and image for viewpoint (6b) at different time frame for the benefit of allowing different stereoscopic images being displayed and viewed at different viewpoints.

With regard to claims 13-16, the lenticular lens has *pitch* that *equals* the sub regions of the spatially divided image times the number of the spatially divided image. The number of deflection direction equals the number of the time division of the image, (such as two for view points 6a and 6b). The total number of input images therefore equals the number of spatially divided image times the number of time divided image, (i.e., four images for two viewpoints 6a and 6b, two for each spatial division and two for time division). The switching and therefore changing the deflection direction of the prism or deflector has to be synchronized with the rewritten of the image, (for view points 6a of 6b).

With regard to claim 18, the rewritten of the image has to be for all pixels of the image display device.

12. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Son et al in view of the patent issued to Moseley et al (PN. 6,611,243).

The three dimensional image display system taught by Son et al as described for claim 12 above has met all the limitations of the claims. Son et al teaches the image display device (15) is within an image projector system (3) and the display device is a *liquid crystal panel*, (please see column 4, lines 1-5). However this reference does not teach explicitly that the projector is comprised of a light bulb with an aperture controlling part such as a microlens. Moseley et al in the same field of endeavor teaches an image projection system in a stereoscopic image display device wherein a *backlight source* (1) with a *microlens* (3) is used to *illuminate* a spatial light modulator, which may be a *liquid crystal display panel*, for generating the desired stereoscopic image pairs, (please see Figure 13). It would then have been obvious to one skilled in the art to apply the teachings of Moseley et al to modify the image projector and

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the image display device of Son et al by having the specific backlight source and microlens arrangement for the benefit of providing the control of generating the desired stereoscopic image pairs for displaying.

13. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nose et al as applied to claim 12 above, and further in view of the patent issued to Moseley et al (PN. 6,611,243).

The *stereoscopic image display device* taught by Nose et al as described for claim 12 above has met all the limitations of the claims. Nose et al teaches that the display device (3, column 6, lines 48-50) is a liquid crystal display device, but it does not teach explicitly that the liquid crystal display device is of projection type with light bulb and an aperture controlling part such as microlens. Moseley et al in the same field of endeavor teaches an image projection system in a stereoscopic image display device wherein a *backlight source* (1) with a *microlens* (3) is used to *illuminate* a spatial light modulator, which may be a *liquid crystal display panel*, for generating the desired stereoscopic image pairs, (please see Figure 13). It would then have been obvious to one skilled in the art to apply the teachings of Moseley et al to modify the image display device of Nose et al by having the specific backlight source and microlens arrangement for the benefit of providing the control of generating the desired stereoscopic image pairs for displaying and for making the stereoscopic image display suitable for projection type of image display.

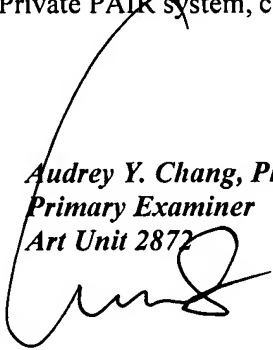
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.